DETAILED ACTION

Status of the Claims

1. Claim 12 has been canceled by the Applicant. Claims 1-11 and 12-16 were amended and Claims 17-23 were added in correspondence filed on 03/21/2006. Claims 1-11 and 13-23 are currently pending. This is the first Office Action on the merits of the claim(s).

Priority

2. Applicant's claim for the benefit of a prior-filed international application EP04/10044 (filed on 09/09/2004) under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. The effective filing date of the instant application is 09/09/2004.

3. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in Germany on 09/17/2003. The priority date of the instant application is 09/17/2003

Claim Rejections - 35 USC § 112 (1st paragraph)

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 20-23 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for treating *Herpes simplex* viral infections comprising the administration of a xanthogenate composition, does not reasonably provide enablement for treatment of other

viral infections, tumors or autoimmune diseases comprising the administration of a xanthogenate composition. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

6. *In re Wands*, 858 F.2d at 736-40, 8 USPQ2d at 1403-07, set forth eight factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." (MPEP § 2164.01(a)) The relevant Wands factors are addressed below:

a. *The breadth of the claim*: The rejected claims are drawn to a method of treating any viral, tumor, or autoimmune disease. The breadth of the rejected claims is astonishing, and includes such disparate diseases as HSV infections, pancreatic cancer, and lupus;

b. *Nature of the invention*: The nature of the invention is a method of treating HSV infections;

c. *The state of the prior art*: Prior art discloses that the etiologies of and treatments for viral, tumor, and autoimmune diseases are be distinct and not freely interchangeable. Moreover, treatments for diseases within the broad scope of viral, tumor, and autoimmune vary. For example, reverse transcriptase inhibitors, which are an effective treatment for HIV, would not be effective against a DNA virus, such as HSV, let alone lupus or pancreatic cancer. Goodman & Gilman's The Pharmacological Basis of

Therapeutics, 10th ed. (2001) contains over 2000 pages directed to different therapies germane to various diseases.

Xanthogenates are known antiviral drugs, and have been effectively used to treat HSV infections (Sauer and Amtmann, International Application WO 96/14841, abstract) and have demonstrated some anti-tumor activity (Amtmann and Sauer, Cancer Letters, 1987, provided in IDS). Examiner found no references indicating that xanthogenates are effective to treat autoimmune disease.

Aciclovir (or Acyclovir) is a known therapy for HSV (Hayden, 2001, pg 1318-1321). Its use in anti-tumor therapy is directed to controlling infections resulting from chemotherapy, rather than possessing anti-tumor abilities itself;

d. *Amount of direction provided by the inventor*: Applicant contends that xanthogenates are effective treatments for viral and tumor diseases, and have cited references supporting this contention (instant specification, paragraph 0002). Applicant contends, but offers no support, that xanthogenates would be effective therapy for autoimmune diseases;

e. *Existence of working examples*: Applicant provides working examples demonstrating that the xanthogenate tricycle[5.2.1.$0^{2,6}$]-decan-9-yl-xanthogenate (D609) works in synergistic concert with acyclovir to reduce HSV infections, *in vitro* and *in vivo*; and,

f. *Quantity or experimentation needed to make or use the invention based on the content of the disclosure*: Applicant claims an exceedingly broad range of diseases to be treated by the claimed method. One of ordinary skill in the art would recognize the

diverse etiologies of the diseases the Applicant claims to treat. Further, the skilled artisan would not readily envisage that a xanthogenate and acyclovir would be effective in treating all viral diseases, all tumors, and all autoimmune diseases. To use the invention as claimed, the skilled artisan would have to develop treatment regimens comprising a xanthogenate and acyclovir. The instant specification provides guidance only for treatment of HSV infections. The instant specification provides no guidance for one of ordinary skill in the art to treat the autoimmune disease lupus, for example. The prior art does not rectify this deficiency, as there are no articles suggesting that xanthogenates would be effective in treating lupus. (Indeed, a PubMed Search of "Xanthogenate" and "Lupus" returned zero articles). Undue and unpredictable experimentation would be required to use the invention as commensurate with the scope of the rejected claims.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-11 and 13-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sauer and Amtmann (above) in view of Hayden (above), Bowman, et al. (US Patent No. 6,265,444, 2001), and Loebelenz, et al. (US Patent No. 6,261,573, 2001).

9. Claim 1 of the instant application is drawn to a pharmaceutical composition comprising a xanthogenate of formula I and an inhibitor of viral nucleic acid replication. The composition

optionally comprises an adjuvant and/or a carrier substance. Claims 2-4 limit R_1 and R_2. Tricyclo[5.2.1.$0^{2,6}$]-decan-9-yl-xanthogenate (hereafter referred to as D609), wherein R_1 is tricyclo[5.2.1.$0^{2,6}$]-decyl, fits these limitations. Claims 5, 6, and 14 limit the viral nucleic acid replication inhibitor (i.e. acyclovir). Claims 7, 15, and 18 limit the relative abundance of the xanthogenate, inhibitor of viral nucleic acid replication, carrier and adjuvant. Claims 8-10 and 19 limit the adjuvant (i.e. dodecanoic acid). Claims 11, 16 and 17 limit the carrier substance (i.e. cholesterol). Claim 13 limits the pharmaceutical formulation to comprise D609, cholesterol or phosphatidylcholine, the sodium or potassium salt of decanoic acid, and an inhibitor of viral nucleic acid replication (i.e. acyclovir) Claim 20 is drawn to a method of treating a viral, tumor or autoimmune disease comprising administration of an effective amount of a xanthogenate of formula I and an inhibitor of viral nucleic acid replication. Claim 21 limits R_1 of formula I. Claim 22 limits the viral nucleic acid inhibitor. Claim 23 limits the composition to comprise (D609) and a specific viral nucleic acid replication inhibitor (i.e. acyclovir).

10. Sauer and Amtmann teach the pharmaceutical formulation comprising D609, (tricyclo[5.2.1.$0^{2,6}$]-decan-9-yl-xanthogenate), which is a specific species of the genus of Claims 1-4, (elaborate on D609) and the potassium salt of dodecanoic acid in cholesterol (pg 7, line 37 to pg 8, line 2), and a method of applying this composition to the shoulders of mice (pg 13, Example 3), or for the treatment of colorectal cancer in mice (pg 16, Example 6B). The relative composition of the pharmaceutical formulation of D609:dodecanoic acid:cholesterol was 1:1:2, and can be added to Vaseline for topical treatment (pg 10, lines 1-4).

11. Sauer and Amtmann differ from the instant application in that they do not disclose the presence of a viral nucleic acid replication inhibitor, or deoxycholic acid or phosphonic acid as

the adjuvant. Also, Sauer and Amtmann disclose dodecanoic acid as an adjuvant, while the instant application (Claim 13) claims the presence of decanoic acid instead.

12. Hayden teaches that acyclovir is a known anti-herpesvirus agent (pg 1317-1320) Combining two agents that are known to have the same function (i.e. treat infections by *Herpes simplex*) is not considered to be a patentably distinguishing feature of an invention. "It is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (MPEP § 2144.06(I).

13. Further, Bowman, et al., and Loebelenz, et al., respectively teach that phosphonic acid (col 7, lines 52-53) and deoxycholic acid (col 3, lines 12-13) are suitable adjuvants. Also, dodecanoic acid and decanoic acid are homologs of each other that differ only in that the former has an additional ethylene group. Compounds which are homologs (compounds differeing regularly by the successive addition of the same chemical group, e.g. by $-CH_2-$ groups) are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. *In re Wilder*, 563 F.2d 457, 195 USPQ 426 (CCPA 1977). One of ordinary skill in the art would reasonably expect that decanoic and dodecanoic acid would be equivalent to each other (MPEP §2144.09(II)). (why??? --- elaborate) Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to modify the pharmaceutical formulation taught by Sauer and Amtmann to include a known viral nucleic acid replication inhibitor such as acyclovir, for the treatment of HSV

infections. Moreover, it the presence of a specific adjuvant is not considered to be a patentably distinguishing feature as the prior art teaches that any of the claimed adjuvants can be used.

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 20-23 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 16 of copending Application No. 10/495,789 in view of Hayden (above). Claims 20-23 of the instant application are drawn to a method of treating viral, tumor, or autoimmune viruses comprising the administration of the xanthogenate of formula I and a viral nucleic acid replication inhibitor. Claims 21 and 23 limit the xanthogenate, and D609 reads on these limitations. Claim 16 of the '789 application is drawn to a method to treat genital herpes, labial herpes, or AIDS, all of which are viral diseases, comprising administration of the xanthogenate is tricyclo[5.2.1.$0^{2,6}$]-decan-9-yl-xanthogenate, or

D609. Although the '789 application does not claim the addition of a viral nucleic acid replication inhibitor, such as acyclovir, one of ordinary skill in the art would know that acyclovir is an effective therapy for herpes infection (Hayden, 1317-1320). It is *prima facie* obvious to combine two agents that are known to accomplish the same purpose (i.e. treat a herpes infection).

This is a provisional obviousness-type double patenting rejection.

Conclusion

16. No claims are allowed.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Zarek whose telephone number is (571) 270-5754. The examiner can normally be reached on Monday-Thursday, 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreenivasan Padmanabhan can be reached on (571) 272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PEZ

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